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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,914	04/19/2007	Ingo Heim	EL/2-22962/A/PCT	7474
324	7590	09/29/2009	EXAMINER	
JoAnn Villamizar Ciba Corporation/Patent Department 540 White Plains Road P.O. Box 2005 Tarrytown, NY 10591			SUCH, MATTHEW W	
			ART UNIT	PAPER NUMBER
			2891	
			NOTIFICATION DATE	DELIVERY MODE
			09/29/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/576,914	Applicant(s) HEIM ET AL.	
	Examiner MATTHEW W. SUCH	Art Unit 2891	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 14-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-7,9-12 and 14-18 is/are rejected.
- 7) ☒ Claim(s) 2 and 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>17 July 2006</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 17 July 2006 is being considered by the examiner.

Specification

3. The disclosure is objected to because of the following informalities: the word "describe" on Page 1, Line 14 should read "describe" and the word "as" on Page 18, Line 26 is repeated twice and one instance should be deleted. Appropriate correction is required.

Claim Objections

4. Claim 1 is objected to because of the following informalities: the phrase "alkynyl group substituted" in Line 13 should read "alkynyl group is substituted". Appropriate correction is required.

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5. Claim 3 is objected to because of the following informalities: the substituent of R^{27} in the phrase "wherein R^{25} , R^{26} and R^{27} " does not appear in any formula of the claim and should be removed. Appropriate correction is required.

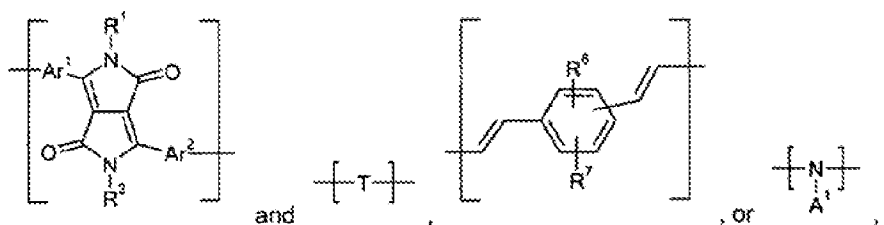
Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

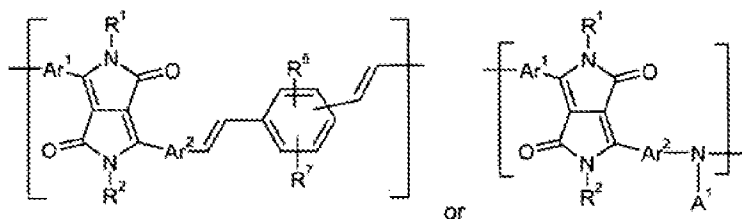
7. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim recites "and repeating unit(s) –T– which is selected from the group consisting of". However, this recitation renders the claim indefinite because the formula set forth by claim 4 does not include the unit of –T–.

8. Claims 5 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim, in Line 3, recites:



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However, it is unclear what is included and excluded from the claimed polymer. What combination of the groups of [T], the dipropylenebenzene, and the amine is intended to be part of the claimed polymer. Furthermore, the group of [T] is not defined by the claim. For the purposes of compact prosecution, the examiner provisionally interprets that the claim reads:



The claim also recites " R^1 and R^2 are independently of each other a C_1 - C_{25} alkyl group, which can be interrupted by one or more oxygen atoms". However, this claim appears to conflict with the previous claim 1, which requires that the C_1 - C_{25} alkyl group be wholly or partially substituted with halogen, while the present claim set forth that the C_1 - C_{25} alkyl group can be unsubstituted. As such, it is unclear whether the C_1 - C_{25} alkyl group is substituted wholly or partially with halogen or whether the C_1 - C_{25} alkyl group is unsubstituted. Claim 18 is indefinite based on its dependency from claim 5.

9. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim recites " R^1 and R^2 are independently of each other a C_1 - C_{25} alkyl group, which can be interrupted by one or more oxygen atoms". However, this claim appears to conflict with the previous claim 1, which requires that the C_1 - C_{25} alkyl group be wholly or partially substituted with halogen, while the present claim set forth that the C_1 - C_{25} alkyl group can be

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unsubstituted. As such, it is unclear whether the C₁-C₂₅ alkyl group is substituted wholly or partially with halogen or whether the C₁-C₂₅ alkyl group is unsubstituted.

Claim Rejections - 35 USC § 102

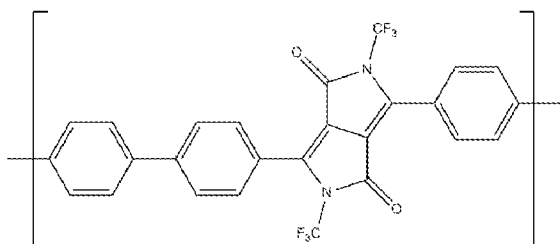
10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1, 3-7, 9-12 and 14-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Tieke ('459).

a. Regarding claim 1, Tieke teaches a polymer comprising the repeating unit of the formula (I) wherein Ar¹ and Ar² are C₆-C₃₀ aryls and R¹ and R² is, for example, perfluoro C₁-C₁₂ alkyl. See the compound of the formula (Col. 1, Lines 8-17) with x = 1 and y = 0, for example (Col. 1, Lines 20-24), Ar¹ can be, for example, biphenyl (Col. 1, Lines 25-30, since Ar¹ of Tieke is phenyl), Ar² can be, for example, phenyl (Col. 1, Lines 25-30), and R¹ and R² is, for example, perfluoro C₁-C₁₂ alkyl (Col. 1, Lines 58-59). An example compound of Tieke that meets the claim as shown is as follows:

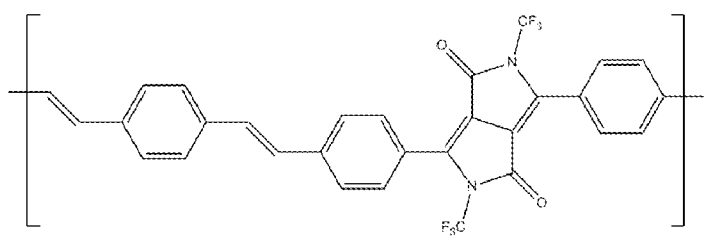


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b. Regarding claim 3, Tieke teaches a polymer with Ar^1 being diphenyl (Col. 1, Lines 25-30, since Ar^1 of Tieke is phenyl) and Ar^2 being phenyl (Col. 1, Lines 25-30).

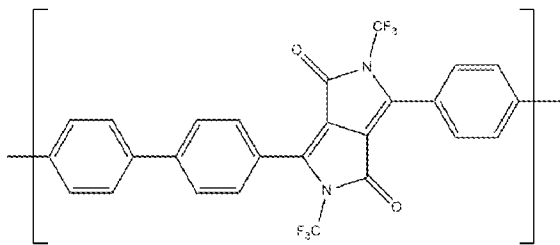
c. Regarding claim 4, Tieke teaches that the polymer comprises a repeating unit of Ar^3 which is for example, a phenyl and $s = 2$ (when y of Tieke is greater than 1 and Ar^1 and Ar^2 are phenyl; see Col. 1, Lines 8-30).

d. In so far as claims 4-5 and 18 are definite, Tieke teaches the polymer compound:



Tieke teaches this compound since Ar^1 of Tieke is dipropylenebenzene.

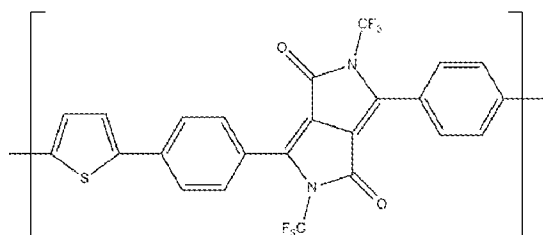
e. In so far as claim 6 is definite, Tieke teaches the polymer compound of:



The compound is a homopolymer with $y = 0$.

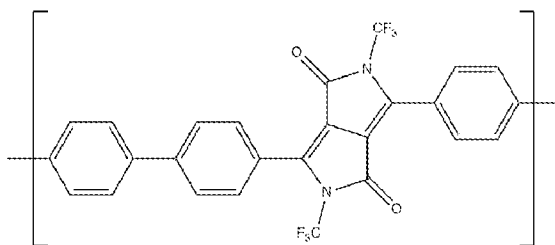
f. Regarding claim 7, Tieke teaches the polymer compound of:

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The group Ar^1 of Tieke is thiophene (see Col. 1, Lines 40-45).

g. Regarding claim 9, Tieke teaches the polymer compound of:



This is the compound of the claim when Ar^1 , Ar^2 , Ar^3 are all phenyl and $a = 1$, $b = 0$, $c = 1$, $d = 0$, $e = 0$ (since d is 0, then e must also be 0), and $f = 0$.

h. Regarding claims 10-12 and 14, Tieke teaches a polymer electroluminescent light emitting device with the compound of the claimed formula 1 as the light-emissive layer between a hole transport layer and an electron transport layer (Col. 7, Lines 28-34). The examiner notes that the hole transport layer is a charge injecting layer for injecting positive charge carriers and that the electron transport layer is a charge injecting layer for injecting negative charge carriers.

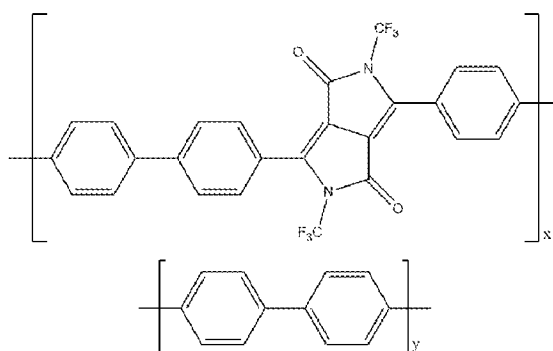
i. Regarding claim 15, since Tieke teaches the compound of formula I with R^1 and R^2 each being, for example, perfluoro $\text{C}_1\text{-C}_{12}$ alkyl groups, then the group of Ar^3 is not

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included in the compound. Therefore, claim 15 is met because claim 15 fails to require that the compound of the claimed formula I actually includes a group of Ar^3 .

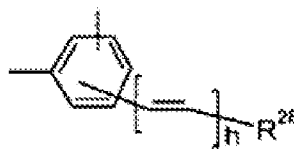
j. Regarding claim 16, since Tieke teaches the compound of formula I which meets claim 3 (as shown above), then the groups of $\text{R}^{28'}$ and $\text{R}^{30'}$ are not included in the compound. Therefore, claim 16 is met because claim 16 fails to require that the compound of the claimed formula I actually includes a group of either $\text{R}^{28'}$ or $\text{R}^{30'}$.

k. Regarding claim 17, Tieke teaches the polymer compound of:



The values for Ar^1 and Ar^2 of Tieke are each phenyl and $x = 0.5$ and $y = 0.5$. This meets

the claimed compound when Ar^1 of the claim is



with $h = 0$ and

R^{28} is phenyl and when Ar^2 of the claim is



with $h = 0$ and R^{28} is

biphenyl.

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Allowable Subject Matter

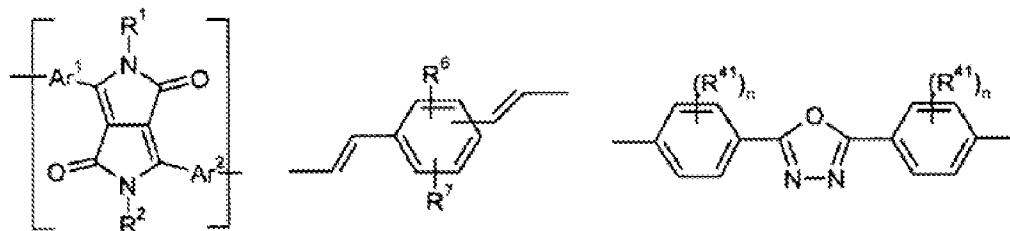
12. Claims 2 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. The following is a statement of reasons for the indication of allowable subject matter:

- i. Regarding claim 2, a search of the prior art does not disclose or reasonably suggest the polymer compound claimed with Ar^1 and Ar^2 each being the groups claimed.

The closest prior art of Tieke ('459) teaches the diketopyrrolopyrrole polymer which can include, for example, thiophene or pyridine, but Tieke also includes phenyl groups whereas Ar^1 and Ar^2 of claim 2 do not have any phenyl.

- ii. Regarding claim 8, a search of the prior art does not disclose or reasonably suggest the polymer compound as a terpolymer as claimed including these three groups:



with the substituents of R^1 , R^2 , Ar^1 , Ar^2 , R^6 , R^7 , R^{41} and n as set forth by the claim.

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The closest prior art of Tieke ('459) teaches the diketopyrrolopyrrole polymer which can include a dipropylene benzene group, but Tieke does not teach that the polymer also includes the 2,5-diphenyl-1,3,4-oxadiazole group.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Beyerlein (Macromol. Rapid Commun., Vol. 21) teaches copolymers of diketopyrrolopyrrole and 1,4-phenylene units.

Contact Information

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW W. SUCH whose telephone number is (571)272-8895. The examiner can normally be reached on Monday - Friday 9AM-5PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kiesha Rose can be reached on (571) 272-1844. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew W. Such/
Examiner, Art Unit 2891